

(No Model.)

T. A. EDISON.  
PHONOGRAPH.

No. 453,741.

Patented June 9, 1891.

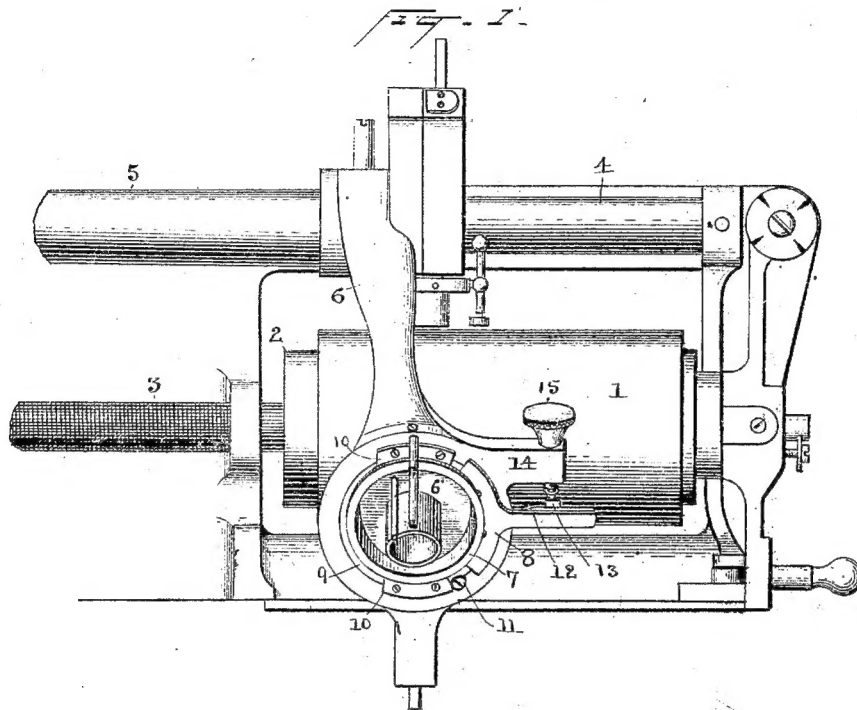


Fig. 2.

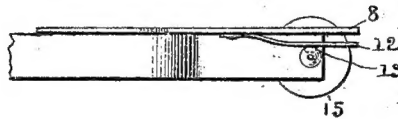


Fig. 3.

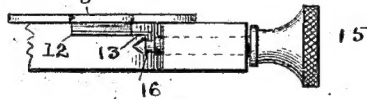


Fig. 4.



Fig. 5.

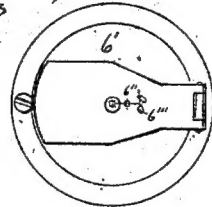


Fig. 6.



Witnesses

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By his Attorneys  
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# UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF LLEWELLYN PARK, NEW JERSEY.

## PHONOGRAPH.

SPECIFICATION forming part of Letters Patent No. 453,741, dated June 9, 1891.

Application filed July 30, 1890. Serial No. 360,348. (No model.)

### *To all whom it may concern:*

Be it known that I, THOMAS A. EDISON, a citizen of the United States, residing at Llewellyn Park, in the county of Essex and State of New Jersey, have invented a certain new and useful Improvement in Phonographs, (Case No. 868,) of which the following is a specification.

The invention consists in novel means for adjusting a phonograph reproducing-point into exact alignment with the phonogram-record.

The invention also consists in means for limiting the movement of the diaphragm which supports the recording and reproducing point when turned to place the reproducer out of operative position and the recorder into operative position.

In the accompanying drawings, which illustrate the invention, Figure 1 is a plan view of so much of a phonograph as is necessary to illustrate the improvement. Figs. 2, 3, and 4 are views of details which will be hereinafter referred to. Figs. 5 and 6 show the recorder and reproducer on a single lever connected to the diaphragm.

1 is a phonogram-blank mounted on a phonogram-cylinder 2, which is turned by the screw-shaft 3 in the usual manner.

4 is the guide-rod on which the sleeve 5, carrying the arm 6, which supports the recorder and reproducer, and which is moved along by a feeding-arm co-operating with the screw 3, is mounted in the usual or any suitable manner.

6' is the phonograph-diaphragm, which, as is well known, supports both the recorder and reproducer, so mounted that when the diaphragm is in one position the recorder 6'' is in operative relation to the phonogram-blank, and in a second position the reproducer 6''' is in operative relation to said blank.

The recorder and reproducer on the under side of the diaphragm are shown in Figs. 5 and 6 of the drawings, the arrangement being the same as described in my application, Serial No. 330,789, filed November 18, 1889. The diaphragm is supported in ring or frame 7. To this ring is fastened an extension 8. The ring is held in place by a flange 9, which extends under the plates or other holding devices 10.

11 is a screw with a cam-shaped head placed in such position that it serves to limit the movement of the arm 8 away from the adjusting device 15, and hence to limit the turning movement of the diaphragm. On one side of the extension 8 is an arm 12, preferably in the form of a spring with a projection 13.

14 is an extension of the arm 6, in which is mounted a thumb-screw 15, the point of which is conical and which is grooved near said point, as indicated at 16, or is otherwise so arranged as to positively engage with arm 12 or with the recorder-support.

The apparatus above described is used as follows: When the arm 8 is moved downward, bringing the recorder-support or an extension thereof against the limiting device 11, it will be understood that the recording-point is in position over the blank. The screw 11 is set in the best position before the phonograph is sent out, and is not intended to be moved except when the range of movement of the arm 8 varies, owing to wear of any parts of the instrument or other cause. When it is desired to reproduce, the arm 8 is moved upward by the hand until arm 12 is positively engaged by the point of screw 15. The hearing-tube is put to the ear, and if it appears from the sound that the reproducing-point is not in line with the phonogram-record the adjusting-screw is turned, thus moving the extension, and hence the diaphragm and reproducing-point until the reproducer is brought into the track of the record. It will be seen that the diaphragm and the supporting-ring turn around an axis, but do not move bodily from one position to another. When it is desired to again put the instrument into position to record, the extensions 8 and the arm 12 are grasped by the hand and pressed together, thereby disengaging the latter from the screw, when the parts may be moved downward.

Having thus described my invention, what I claim is—

1. In a phonograph, the combination of a movably-supported phonograph-diaphragm, an adjusting-screw, and means for making a positive engagement between said screw and diaphragm, whereby the diaphragm may be moved to adjust the reproducer, substantially as described.

2. In a phonograph, the combination, with a diaphragm and a support therefor, of an extension from said support, an arm on said extension, and an adjusting-screw the point of which has means for engaging with said extension, substantially as described.

3. In a phonograph, the combination, with a diaphragm and a support therefor, of an extension from said support, a spring-arm on said extension, and an adjusting-screw the point of which is conical and which is grooved for engagement with the spring-arm, substantially as described.

4. The combination, in a phonograph, of a diaphragm, a support therefor, an extension for moving said support, and an adjusting-screw acting on said extension in the direction of its motion to bring the diaphragm in position for reproducing, substantially as described.

5. In a phonograph, the combination of a diaphragm, a support therefor which can be turned on its axis, and an adjustable limiting-stop whereby the turning movement of the diaphragm may be limited, substantially as described.

6. In a phonograph, the combination of a diaphragm to which is connected an operating-point, a support for the diaphragm, mounted to turn around the axis of the diaphragm, an extension from said support, and a limiting-stop, substantially as described.

This specification signed and witnessed this 5th day of July, 1890.

THOS. A. EDISON.

Witnesses:

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W. PEIZER